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WHY THE NATION NEEDS MORE FATS . . . *With some opinions by medical, scientific and other authorities.*

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WHY THE NATION NEEDS MORE FATS

Interesting information about the need for eating more butter or vitaminised margarine

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FOREWORD

Authorities on food and diet are just now spending a considerable part of their time in studying and explaining the vital part played in nourishment and general health by fats and those wonderful protective food elements known as fat soluble vitamins.

Many pioneer students and research workers in our own country have given us a great deal of extremely valuable information, which shows that nearly everyone in this country eats too little fat—that is "raw", fat in the shape of butter, vitaminised margarine, etc. It is a proven fact that many millions of people in this country are suffering from a more or less acute shortage of fats in their diet.

The question is not, however, simply one of *how much* fat should we eat, but what is the *right* fat to consume? As will be seen from the pages of this brochure, the crying need is for more fat which can be eaten raw and which contains the protective vitamins. Such fat must also be palatable or it will not be readily accepted by the body as food, and without the essential vitamins the body cannot grow, could not resist disease if it could grow, and could not reproduce itself even if it could grow and reach the normal age of maturity.

WHY THE NATION NEEDS MORE FATS

I

Everyone needs warmth and energy.

The important function of providing the body with heat and energy is shared in the main by fats and carbohydrates (typical carbohydrate foods are bread and other cereal foods, potatoes and sugary articles). It is an interesting fact, however, that as fuel and energy providers, fats are $2\frac{1}{2}$ times as valuable as carbohydrates, weight for weight. Yet although in theory the one could replace the other in supplying the body with energy, we find in practice that this is not so. The reason is that, as foods, these two commodities are interdependent—we need to eat fat in order to assimilate carbohydrates, and carbohydrates in turn make possible the assimilation of fat.

This knowledge is put to good use by authorities who are responsible for planning meals for schoolchildren. Invariably they make a strong recommendation that more fat, in the nature of butter or a vitaminised margarine, be included in the diet. And this need for more raw fats is not confined to children. Millions of adults in Great Britain are to-day unknowingly suffering from a shortage of " raw " fats

in their diet. Every adult person, in order to supply his or her body with the necessary warmth, energy and protection from disease, should eat daily 15 ozs. of carbohydrate-type foods, and 3 to $3\frac{1}{2}$ ozs. of fats. This fat requirement would be adequately met by a daily consumption of about $3\frac{3}{4}$ ozs. of butter or vitaminised margarine.

The need for an adequate quantity of fat in the diet is stressed by many competent authorities, as the opinions expressed in the extracts at the end of this section will serve to show. The chief medical officer of the Board of Education, in his annual report for the year 1934, deals with diets for both normal and necessitous schoolchildren, and referring to the latter, he states that " extra fat in the nature of dripping, butter or vitaminised margarine, and fresh fruits and vegetables . . . should regularly find place in the menus."

Whenever the question arises of food supplies for expeditions, troops, athletics teams or other bodies of people requiring a diet to sustain them under arduous conditions, fats always figure prominently in the menu.

Everest expeditions, facing extremes of cold and heat, and expending tremendous amounts of energy in rarified atmospheres, take margarine as a staple article of diet.

Many more examples of this pressing need for plenty of fats in the diet could be cited. There is not sufficient space here to do more than quote the words of a few representative authorities on diet. Extracts from their writings are given in support of the facts contained in this important section.

From The Annual Report of the Chief Medical Officer of the Board of Education, 1931.

Referring to diets for school children the report states: "What has been said above (regarding diet for normal children) applies generally also to the meals provided for necessitous children. There is abundant evidence that a direct result of poverty is to reduce the amount of protein and fat in the diet, and relatively to increase the carbohydrate. Dinners for necessitous children should be planned to supply at least two-thirds of the daily requirements as to proteins, fats and vitamins. Unless milk is provided the daily allowance of meat or fish should be 4-5 ozs. or alternatively 2½ ozs. of cheese. *Extra fat, in the nature of dripping, butter or vitaminised margarine,* and fresh fruits and vegetables . . . *should regularly find place in the menus.*"

From "Food and Dietetics" by Robert Hutchison, M.D.Edin., F.R.C.P.

"How much Carbohydrate and Fat should the diet contain?

"As far as the demand of the cells for energy is concerned, it is within limits a matter of indifference how much of the total energy required is obtained in each of these forms, provided one remembers always that *it takes 2¼ parts of carbohydrates to supply as many calories as 1 part of fat.* To the digestive organs, however, it is by no means a matter of indifference. If all the energy not provided as protein were to be supplied in the form of carbohydrates it would mean that a large *bulk* of food must be consumed, which would be not only apt to overload the stomach and intestines by its mere weight, but would also be prone to undergo fermentation, leading to the production of flatulence and acidity. . . .

"We have already seen that 150 grammes of fat can be absorbed daily without much difficulty, but in most persons anything above 100 grammes (3½ ounces) in winter and rather less in summer would be apt to produce

disorders of digestion. For this reason alone, therefore, *it is well to take a mixture of carbohydrate and fat*, rather than either of these exclusively, and 50 grammes of fat (=2½ ounces of butter) to 500 of carbohydrate (=1 pound 2 ounces of sugar) may be regarded as a reasonable proportion. This is in the ratio of one part of fat to 10 of carbohydrate. Many authorities, however, recommend that the daily ration of fat should not fall below 75 grammes."

From Starling's "Principles of Human Physiology" (6th Edition).

"It is stated by Hindhede that a man can be kept alive and can work normally on a diet in which fat is practically absent. . . . This statement may be true, but it is certain that it cannot be applied to all human beings. In practice we have to provide for each race a minimum desirable quantity of fat, which will differ in different races and be larger in northern than in southern races.

". . . in our country *the average man would not be content with less than 75 grammes of fat per day*. Seventy-five grammes of fat has a caloric value of about 680, i.e., nearly 25 per cent. of the daily requirements, and we may conclude as a general rule that *one-fourth of the total energy should be supplied in the form of fat.*"

THE CONQUEST OF EVEREST.

In an article which appeared in the "Bristol Evening World" on 22nd February, 1936, reference is made to the care with which food is chosen for members of the Everest Expedition. The following paragraph deals with the need for fats :—

"*Fats are most important for warmth*, and besides the *margarine* the expedition will take pemmican, a sort of cake made of dried and pounded meat mixed with melted fat."

Note : Italics in quotations are our own.

WHY THE NATION NEEDS MORE FATS

2

For the regulation and control of digestion.

It is not generally known that fats perform a useful function in controlling the rate of digestion. While they are themselves gradually digested, absorbed and utilised, fats also prevent the over-rapid digestion of other foods taken with them. They also have an important function in preserving the right consistency of the bowel content.

Apart from these general functions of fats as food, it should be remembered that not all fats have the same nutritive properties or are accepted by the digestive organs with equal readiness. It is this fact which renders palatability of such great importance. It is the palatability of foodstuffs which initiates the flow of digestive juices, without which good nutrition is impossible. Hence the form which fat foods take is an important consideration. They must, above all, be attractive to the eye and the palate and also easily digested. Butter and vitaminised margarine are particularly suitable fat foods since they are pleasant in flavour and can be readily com-

bined with other foods, e.g., bread, cereal meals, or potatoes, and so fitted into their natural place in the dietary.

The pleasant aroma and taste of vitaminised margarine is largely determined by the milk employed, primarily as a source of flavour and, secondly, as an emulsifying agent.

The milk is first pasteurised to ensure the destruction of all dangerous micro-organisms which might also affect the flavour, and is then ripened by inoculation with pure cultures of the desirable lactic acid bacteria.

It is the aroma and taste of good butter and vitaminised margarine which place these articles so far ahead of other edible fats in the important matter of gastric stimulation and initiation of the flow of digestive juices. The more attractive the food the more good it does you.

The extracts from the writings of eminent dietitians which follow this section show how real is the need for a proper proportion of fat in our daily food.

XTRACTS

From Starling's " Principles of Human Physiology " :—

" There are probably three reasons for this craving for fat. In the first place, *fat is easily assimilated* and is almost entirely absorbed in the

alimentary canal ; but whereas the greater part of the carbohydrate food is absorbed three hours after food has been eaten, the chief absorption of fat occurs between five and six hours after a meal. On this account *a meal lacking in fat is deficient in staying power*, and individuals deprived of fat get hungry some time before the next meal. The lumbermen of Canada satisfy their huge needs in calories—6,000 to 8,000 a day—by a diet in which the fat represents 35 to 40 per cent. of the calories."

* *Latest edition revised and edited by C. Lovatt Evans, D.Sc., F.R.C.P., F.R.S.*

From " Nutrition and Diet " by James S. McLester, M.D., Professor of Medicine at the University of Alabama. This famous American authority, attaches great importance to the palatability and staying power of fats ; he writes :—

" *The food should be palatable, else it will not be eaten.*

" It should always be satisfying, and to this end attention should be given to its satiety value. Meats have the greatest satiety value of all foods—they " stick to the ribs " longest : soups because of the meat extractives contained in them, also enhance greatly the satiety value of a meal. *Fats, especially butter spread on bread, do the same.*"

From " Food and Dietetics " by Robert Hutchison, M.D., Edin., F.R.C.P. In the first chapter of his book, dealing with the relative values of foods, he says :—

" Before leaving the subject, mention must be made of one other quality of foods which seems specially to affect the stomach, and which, for want of a better term, is commonly called their satisfying power. It is a matter of common knowledge that some foods appease the appetite and allay the feelings of hunger longer than others. Such foods are said to be ' satisfying.' . . . What it is which confers this quality upon some foods rather than others, is not perfectly clear ; but there is reason to believe that it depends to some extent upon the amount of fat which the food contains. *Foods rich in fat are more satisfying than others.* It is believed to be for this reason that eggs possess the quality under consideration in no ordinary degree. Other properties such as the amount of solid matter to be digested and the bulk of the food, no doubt also play a part in producing the feeling of ' satisfaction ' ; but whatever the explanation of the quality is, it certainly has to be reckoned with in estimating the values of a food from the stomach point of view."

Note : Italics in quotations are our own.

WHY THE NATION NEEDS MORE FATS

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Because of the need for Vitamins A and D—known as the "Sunshine Vitamins."

What are Vitamins and what is their value in the diet? It would take too long to give fully what is known about vitamins and their functions, but if you remember that they are known to dietitians and others as "accessory food factors" and that the human body cannot exist for long without them you will appreciate the importance of the following paragraphs.

It may be interesting to give some information about the Vitamins A and D, which are found in summer butter and vitaminised margarine.

Vitamin A is the growth-promoting vitamin and also gives the body power to resist infection. It is soluble in fats. It is notable, also, that this Vitamin resists the ordinary heat of cooking, unless this is unduly prolonged.

Vitamin D is the anti-rickets or calcifying vitamin, as it is called, because it promotes the calcification of bone. A shortage of vitamin D in the diet gives

rise to poor development of bones and teeth, even when the food contains all the other nutriment necessary for good health. It is soluble in fats.

These vitamins are absolutely essential to growth, to health and to strength and vitality. It is, therefore, important and disturbing to note that, according to the latest and most reliable national surveys* the diet of at least 13½ million people in Great Britain is definitely deficient in *all* the vitamins, while the diet of an additional 9 million people is deficient in Vitamin A. It follows, then, that no less than 22½ million people in this country lack adequate supplies of Vitamins A and/or D.

Why is this so? The reason is not far to seek. Too often the diet does not include sufficient good summer butter or vitaminised margarine, for it must be emphasised that many of the fatty foods habitually consumed are practically, if not entirely, devoid of Vitamins A and D, or at the most have a vitamin potency only a fraction of that of good summer butter or vitaminised margarine.

In this connection it is important to note that not all margarine is vitaminised margarine, and not all butter is of good summer quality. Winter quality butter has but a fraction of the vitamin potency of good summer butter or vitaminised margarine.

* *See quotations following this section.*

Small wonder then, that many eminent Health Officials, Doctors, Scientists, Dietitians and responsible men and women of independent judgment throughout the country insist that good summer quality butter or vitaminised margarine must form an essential part of the diet of every man, woman and child in the country.

We reproduce here some observations on vitamins and their importance in the diet by some of the highest authorities in the country.

EXTRACTS

From " Food, Health & Income " Sir John Orr gives the following as one conclusion of his survey :—

" An examination of the composition of the diets of the different income groups (of persons) shows that the degree of adequacy for health increases as income rises. The average diet of the poorest group, comprising 4½ million people, is, by the standard adopted, deficient in every constituent examined. The second group, comprising 9 million people, is adequate in protein, fat and carbohydrates, *but deficient in all the vitamins* and minerals considered. The third group, comprising another 9 million, is deficient in several of the important vitamins and minerals."

From " Oils, Fats & Fatty Foods " by E. Richards Bolton, F.I.C., F.C.S., in the Chapter on Vitamins, contributed by J. C. Drummond, D.Sc. (Lond.) F.I.C., light is thrown on the question of vitamin occurrence in Butter. He writes :—

" The vitamin A content of milk fat is entirely dependent on the amount present in the diet of the cow, and considerable variations in the nutritive value of milk and butter may occur under natural conditions from this cause. Thus in one experiment (Journal of Agricultural Science, 1924, 14, 531) the vitamin A value of the butter yielded by a number of individual cows fed on a typical farm ration of roots, hay and concentrates, such as is employed in most parts of England in winter when the animals are in stall, *fell to approximately one-tenth of its summer value.*"

From " Dietaries for School Children " Chapter VIII of the Annual Report of the Chief Medical Officer of the Board of Education 1934, *we find :—*

". . . for delicate malnourished children attending a day or open-air school . . . the dietary should be planned to supply the total daily requirements as regards animal protein, fat, minerals and vitamins, for it is not safe to assume that any appreciable supply of these will be obtained at home. To fulfil this requirement at least one pint of milk per child should be allowed daily, in addition to an adequate supply of meat or fish. *Special care should be taken to supply a sufficiency of vitamins : at least one ounce daily of butter or of vitaminised margarine should be given*, together with an orange, a tomato or a helping of fresh salad twice or three times a week."

From " Nutrition in the Coalfield," a leading article which appeared in " The Lancet " of 16th May, 1929, *further light is given on the seriousness of a shortage of Vitamin D in the diet. The following is a paragraph from this article :—*

" The whole account induces a profound misgiving that the supply of Vitamin D, even to the adult population, may be insufficient. In view of these latest revelations, greater stress should perhaps be laid upon this particular need than was done in our columns a few weeks ago. *The margarine used should be exclusively one to which the vitamins A and D have been added.*"

From " What to Eat, and Why " by Dr. J. Neil Leitch, M.D., M.R.C.P. (Lond). He writes :—

" Margarine as sold to-day is equal to butter both from the chemical and dietetic point of view. Indeed, those margarines which are sold with a standardised Vitamin A and D content are better than unstandardised butters in which, as we have seen, the vitamin content varies greatly."

From The Medical Research Council's Report No. 211 *on the " Influence of Diet on Caries in Children's Teeth." This report stresses the importance of Vitamin D., and says :—*

" The investigations described in this report show conclusively that a relatively high vitamin D content of the food can do much to diminish the incidence of caries, if the vitamin is given during the development of the teeth ; that a beneficial effect may be obtained if the vitamin is given at a fairly late stage of development ; and that even when it is given after the eruption of the teeth, the onset and spread of caries is delayed."

THE ECONOMIC FACTOR

It may surprise the reader to learn that in order to obtain the fat equivalent of even 2-ozs. of butter or vitaminised margarine the following amounts of common foods would have to be consumed :

		Average Cost
Lean Beef	50 ozs.	4/–
Lean Mutton	35 „	2/2
Lean Bacon or Pork	25 „	2/3
Eggs	20 „	1/8
Oatmeal	25 „	–/8
Bread	1,000 „	166/8
Potatoes	600 „	4/8

And in contrast to these costs, 2 ozs. of good, vitaminised margarine cost approximately *one penny*.

Authorities who are concerned with the diet of large numbers of children or adults must be vitally interested in the supply of the proper fats at minimum cost. That is why so many public authorities give every encouragement to the increased consumption of butter or vitaminised margarine. Cost, however, is often an important factor and the supply of adequate quantities of summer butter is probably out of the question. Vitaminised margarine, therefore, is the obvious alternative and one which has been proved to fulfil all the most exacting requirements of flavour, food value, digestibility and vitamin content at about half the cost of good butter.

CORRECTION PAGE 14 TABLE

The price for 1000 ozs. of brea
should read 11/8 instead of 166/

NOTES ON THE LABORATORY CONTROL OF THE VITAMINS A AND D ADDED TO MARGARINE

Vitamin A is extracted from livers and arrives at the factory as a concentrated solution in oil. It may be noted that the concentration is so great that a little over one pint of the concentrated vitamin is sufficient to vitaminise one ton of margarine.

An estimate of the amount of vitamin A present may be obtained by measurement in a colorimeter of the amount of blue colour produced when a standard quantity of the material under investigation is mixed with a solution of antimony trichloride in chloroform. This method is used at every stage during the purification of the vitamin solution in the oil refinery.

The concentrate is first treated in the refinery to give an odourless, bland edible oil. The strength of this product is ascertained and it is then diluted with edible oil to a standard concentration of vitamin A. To this oil is then added the requisite amount of an extremely concentrated, standardised solution of vitamin D in oil, and the mixture well stirred. The quantities of vitamins A and D in this finished

solution are so balanced that, when added to the extent of 4 per cent. to the other edible oils in the margarine, the amount of vitamins in the margarine is equal to that of summer butter.

All churnings of margarine from the factory are tested to make sure that the vitamins are present. Testing is carried out by the method outlined above, and also by examining the samples in ultra-violet light. Vitaminised margarine gives a characteristic fluorescence in this light, which is not obtained with non-vitaminised margarine.

The above describes the process used in the factories owned by Messrs. Van den Berghs, Ltd., and Messrs. Jurgens, Ltd.

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